## Claims

[c1] What is claimed is:

1. A welding power supply comprising:

a source of power;

a controller connected to the source of power;

an output feedback circuit connected to the controller; and

wherein the controller is configured to receive a fault signal indicative of a fused electrode condition and automatically reduce an output of the source of power upon receipt of the fault signal.

[c2] 2. The welding power supply of claim 1 wherein the controller is configured to reduce the output of the source of power to a minimum output level upon receipt of the fault signal.

[c3] 3. The welding power supply of claim 2 wherein the minimum output level includes an output current of approximately one ampere.

[c4] 4. The welding power supply of claim 1 wherein the controller is further configured to drive the source of power to have a non-welding output upon receipt of the fault signal.

[c5] 5. The welding power supply of claim 4 wherein the controller is further configured to automatically drive the source of power to have a standby output upon receipt of an unstuck electrode condition signal.

[c6] 6. The welding power supply of claim 1 configured to provide an early indication of a fused electrode in a stick welding process.

[c7] 7. A controller configured to regulate output of a welding power source, the controller comprising:

an output feedback circuit configured to provide a signal indicative of an output condition at a welding area;

a control circuit connected to the output feedback circuit and configured to regulate output of a welding power source based on the signal provided by the output feedback circuit; and

wherein the control circuit is further configured to automatically reduce the

output of the welding power source upon receipt of a fused electrode condition signal.

[c8] 8. The controller of claim 7 wherein the control circuit is further configured to automatically drive the welding power source to a standby state upon receipt of an electrode un-stuck condition signal from the output feedback circuit.

[c9] 9. The controller of claim 8 wherein the control circuit is further configured to reduce the output of the welding power source to a minimum welding output upon receipt of the electrode stuck condition signal.

[c10] 10. The controller of claim 9 wherein the minimum welding output is that necessary to initiate welding upon demand without a restart.

[c11] 11. The controller of claim 7 wherein the control circuit is further configured to drive the welding power source to have a non-weld output upon receipt of the fused electrode condition signal.

[c12] 12. The controller of claim 7 incorporated into a stick welding system.

[c13] 13. A computer readable storage medium having a computer program stored thereon to regulate a welding power source, the computer program indicating a set of instructions that when executed by a processor causes the processor to:
receive an input indicating a welding output condition of a welding operation;
determine from the input if an electrode is stuck in a weld; and
if an electrode sticking condition is determined, automatically output a command signal to the welding power source to reduce power source output to a prescribed level until an input indicating an electrode unstuck condition is received.

[c14] 14. The computer readable storage medium of claim 13 wherein the prescribed level includes a minimum welding output.

[c15] 15. The computer readable storage medium of claim 14 wherein the minimum welding output includes an output current necessary to quickly increase power source output.

[c16] 16. The computer readable storage medium of claim 13 wherein the prescribed level includes a non-welding, standby output.

[c17] 17. The computer readable storage medium of claim 16 wherein the set of instructions further causes the processor to prevent a return to a welding output until an open circuit input is received.

[c18] 18. A welding power supply comprising:
means for providing power suitable for welding;
means for controlling the means for providing power;
means for providing feedback of a welding area; and
wherein the means for controlling includes means for reducing an output of the means for providing power based on reception of a signal from the means for providing feedback indicating a fused electrode at the welding area.

[c19] 19. The welding power supply of claim 18 wherein the means for controlling further includes means for maintaining the reduced output until reception of a signal from the means for providing feedback indicating an electrode un-sticking at the welding area.

[c20] 20. The welding power supply of claim 18 wherein the means for reducing includes means for lowering the output of the means for providing power to have a current needed to quickly restart welding.